

REMARKS

In response to the Official Action mailed on January 17, 2006, the application has been amended. No new matter has been added. Reconsideration of the rejections of the claims is respectfully requested in view of the above amendments and the following remarks.

In paragraph 3 of the Official Action, claims 62 - 65, 75 - 82, and 87 - 89 were rejected under 35 USC 112 as indefinite due to certain typographical errors in claims 62 and 87. The error in claim 62 has been corrected, thereby overcoming the rejection. Specifically, claim 62 has been amended as suggested by the Examiner to change "contract" to "contact". Claim 87 has been cancelled as unnecessary, thereby rendering the rejection of claim 87 moot.

In paragraph 5 of the Official Action, claims 62 - 65, 77 - 82, and 84 - 86 were rejected under 35 USC 102(b) as anticipated by Kawamura (U.S. Patent No. 3,796,332). This rejection is respectfully traversed.

Amended claim 62 describes a clamping apparatus including four clamping arms able to grasp a rectangular load from four sides thereof. Amended claim 62 is supported by page 2 of the specification as filed. Kawamura does not disclose or suggest such an arrangement.

Kawamura discloses a cargo handling device having gripping

claws 16 - 19 mounted on holding arms 12 - 15 on two opposing sides of a gripping means 6, whereby the cargo handling equipment can grasp only two sides of a load. There is no disclosure or suggestion in Kawamura of providing clamping arms so as to be able to grasp four sides of a rectangular load as set forth in claim 62. In paragraph 8 of the Official Action, the Examiner stated with respect to claims 87 - 89 that it would have been obvious to have modified Kawamura so as to pick up a load from four sides. However, no disclosure providing any motivation for such a modification can be found in Kawamura. The Official Action states in paragraph 8 that it would have been obvious to have modified Kawamura such that it could pick up a load from four sides "as this would merely involve rearranging the location of the gripping arms to accommodate a desired size or shape of load". By use of the words "merely involve rearranging", the Official Action implies that modification of Kawamura would not be difficult, and that if a modification is not difficult, then the modification must be obvious. The Applicant disagrees with both of these contentions. Firstly, the difficulty of a modification by itself does not result in obviousness if the prior art does not suggest the desirability of making the modification. The level of skill in the art cannot be relied upon to provide the suggestion for a modification. See MPEP 2143.01(IV). Unless there is first some suggestion to be found in the reference to make the modification, then the difficulty of a modification is essentially irrelevant. Secondly, it is important to note that the structure of the device disclosed by

Kawamura does not permit the locations of its gripping arms to be rearranged, "merely" or otherwise. The device of Kawamura is intended to perform two functions. One function is to move a first pair of gripping claws 16, 17 towards and away from an opposing pair of gripping claws 18, 19 to grip and release cargo. The second function is to adjust the spacing between two claws in one pair (such as claws 16 and 17 in Figure 2 of Kawamura). For this second function, Kawamura provides a central cylinder 38 and a plurality of levers 41 - 44, best seen in Figure 3. To the extent that the levers 41 - 44 function at all, they can only operate when the gripping claws 16 - 19 are disposed on two opposing sides of a load. If the locations of the gripping claws 16 - 19 were somehow "rearranged" as proposed by paragraph 8 of the Official Action so as to pick up a load from four sides, the structure including levers 41 - 44 of Kawamura would be rendered inoperative, taking away one of the intended functions of the device of Kawamura. It cannot be obvious to modify Kawamura in a manner that is not only not suggested but which additionally renders the apparatus Kawamura unable to function in its intended manner. If a proposed modification would render the prior art invention unsatisfactory for its intended purpose, then there is no suggestion or modification to make the proposed modification. See MPEP 2143.01(V).

Accordingly, as Kawamura neither discloses nor suggests all the features set forth in amended claim 62, it does not anticipate this claim or render it obvious. Claim 62 and claims 63 and 64 which depend from claim 62 are therefore allowable.

Claim 65 has been cancelled as unnecessary, so its rejection is now moot.

To improve its readability, claim 84 has been rewritten as new claim 96, which describes a clamping apparatus including two pairs of opposing clamping arms positioned on a frame so as to be able to grasp a rectangular load from four sides of the load. Claim 96 is supported by previous claim 84 and by page 2 of the specification as filed. As discussed above with respect to claim 62, there is no suggestion in Kawamura of modifying Kawamura so as to have clamping arms able to grasp a load from four sides thereof. Accordingly, since Kawamura does not disclose or suggest all the features set forth in claim 96, it cannot render this claim obvious. Claim 96 is therefore allowable. Claims 77 - 82 have been rewritten as new claims 97 - 102 which depend from claim 96 and so are allowable by their dependency from claim 96, as is claim 85 which has been amended to depend from claim 96. Changing the dependency of claims 77 - 82 required certain changes in the language of these claims when they were rewritten as claims 97 - 102 so as to be consistent with the language used in independent claim 96. These changes are for the purpose of clarity and uniformity and are unrelated to issues of patentability.

In paragraph 6 of the Official Action, claims 62 - 65, 77 - 82, and 84 - 86 were rejected under 35 USC 102(b) as anticipated by Panissidi (U.S. Patent No. 4,456,293). This rejection is respectfully traversed.

As stated above, amended claim 62 and new claim 96 (formerly claim 84) each describe a clamping apparatus including four clamping arms for grasping a rectangular load from four sides thereof. Panissidi does not disclose or suggest such an arrangement. Panissidi discloses an article gripping apparatus for use in a programmable robot. The apparatus has two opposing fingers 30 supported by a four-bar linkage arrangement. There is no disclosure or suggestion of providing the apparatus with two pairs of clamping arms, as set forth in amended claim 62 or claim 96. As such, Panissidi cannot anticipate claim 62 or claim 96 or render them obvious. Claim 62, claims 63 and 64 which depend from claim 62, and claim 96 are therefore allowable. As described above, claims 77 - 82 have been rewritten as new claims 97 - 102 which depend from claim 96, and claim 85 has been amended to depend from claim 96, so these claims are likewise allowable. Claims 65 and 86 have been cancelled as unnecessary, so the rejections of these claims is now moot.

As acknowledged on page 10 of the present application, it is well known to grasp a rectangular load from four sides. A few typical examples of devices for grasping a load in such a manner are disclosed in Richardson (U.S. Patent No. 5,161,934), Williams (U.S. Patent No. 5,253,974), or Tygard (U.S. Patent No. 5,516,255). A copy of the first page of each of these patents is attached. (These patents were not submitted as part of an Information Disclosure Statement because they are not considered relevant to the claims of the application and are discussed here merely by way of setting forth the technical background.) As

shown by the art cited in the Official Action, it is also known in various applications to use a 4-bar linkage to control the angle of a portion of a device for grasping an object. However, it has not hitherto been proposed to use a four-bar linkage in a device capable of lifting one or more layers of objects from a pallet. As illustrated by the Richardson, Williams, or Tygard patents, in conventional devices of this type, it was standard either for a clamping pad to be rigidly mounted at the bottom of an arm (as in Williams), or for a clamping pad to be able to freely pivot with respect to the arm (as in Richardson or Tygard). Neither arrangement is fully satisfactory. In a device like that shown in Richardson, the angle of contact between the contact pad and a layer of objects being lifted varies with the dimensions of the layer and so can vary widely. In a device like those shown in Richardson or Tygard, the angle of a contact pad is not controllable, so it cannot be set to a suitable value in accordance with the type of items in a layer which is to be lifted. The present inventor was the first to realize the benefits of applying a four-bar linkage to controlling the angle of a contact portion of a clamping apparatus for use in lifting a layer of items from a pallet from four sides of the layer, thereby enabling the angle of contact between a contact portion and a load to be suitably set for a wide variety of loads. As such, the present invention provides significant benefits in the field of material handling and particularly in the handling of packaged foods or beverages.

In paragraph 8 of the Official Action, claims 87 - 89 were rejected under 35 USC 103(a) as unpatentable over Kawamura. Claims 87 - 89 have been cancelled as unnecessary, so this rejection is now moot.

In paragraph 9 of the Official Action, claims 75 and 83 were rejected under 35 USC 103(a) as unpatentable over Kawamura in view of Kovacs (U.S. Patent No. 5,192,179). This rejection is respectfully traversed.

Both claim 75 and claim 83 describe a clamping apparatus including an adjustable-length control rod for changing an angle of a contact portion of a clamping arm. Neither of the cited references discloses or suggests such an arrangement.

As acknowledged by the Official Action, the device disclosed in Kawamura does not have the ability to change the angle of a contact portion.

Kovacs was relied upon as supposedly showing a structure which changes the angle of an implement relative to an arm by adjusting the length of a link element. However, as far as the Applicant can see, this characterization of Kovacs is not entirely accurate. Kovacs does include structure for adjusting the angle of an implement with respect to the vertical, but Kovacs does so not by changing the length of a link but by changing the positions of the ends of fixed-length links. Looking, for example, at the embodiment shown in Figure 1B of Kovacs, the angle of a bucket B with respect to the vertical can be adjusted by activating hydraulic cylinder 48, which pivots

arms 40 and 41 about axis A-A. The pivoting of arms 40 and 41 shifts the inboard pivot points (indicated by bolts 54) of links 50 and 51. Namely, when the hydraulic cylinder 48 is activated, the inboard pivot point of one of links 50 and 51 is shifted towards the bucket B, while the inboard pivot point of the other of the two links 50 and 51 is shifted away from the bucket B, thereby pivoting the bucket B about axis F-F. There is no change in the length of any link during this operation. In fact, there is not even any link which is capable of changing in length.

Thus, neither of the cited references discloses an adjustable-length control rod, so the references cannot be combined so as to result in an arrangement having all the features set forth in claim 75 or 83 and so cannot render these claims obvious. Claims 75 and 83 are therefore allowable.

The arrangements described by claims 75 and 83 employing an adjustable-length control rod enables the angle of a contact portion to be adjusted by employing a structure which is far less complicated than that employed in Kovacs, making the device easier to manufacture, easier to operate, and easier to maintain.

New claims 90 - 95 describe additional features of the present invention. Claims 90 - 94 are allowable as depending ultimately from claim 62. New claim 95 describes a clamping apparatus for lifting a rectangular layer of objects from a pallet having clamping arms with contact portions which can be spaced from each other by at least 28 inches, the contact portions having a substantially planar contact surface which

extends between an upper and lower edge of the contact portions. None of the references discloses or suggests such an arrangement. The cargo handling equipment disclosed in Kawamura has gripping claws with ramp-shaped portions at their lower ends. The ramp-shaped portions render the gripping claws unsuitable for lifting a layer of discrete objects from a pallet, since the ramp-shaped portions are necessarily wedged underneath the objects at the edge of the layer. The wedging action of the ramp-shaped portions may damage the objects which they contacts, and even if it does not directly cause damage, the objects which the ramp-shaped portions contact are lifted up above other objects in the layer, resulting in the layer being uneven in height and in nonuniform forces being applied to the different objects, which can cause damage to the objects. The article gripping apparatus disclosed in Panissidi is intended for use with a programmable robot and is clearly not intended for or capable of lifting a layer of objects on a pallet having a distance between opposite sides of at least 28 inches. Kovacs discloses a single lift arm system and does not disclose anything about a clamping apparatus for lifting a rectangular load. Thus, none of the cited references discloses or suggests an arrangement as set forth in claim 95. Claim 95 is therefore allowable.

The allowability of new claims 96 - 102 (corresponding to old claims 84 and 77 - 82) has been discussed above.

In light of the foregoing remarks, it is believed that the

present application is in condition for allowance. Favorable consideration is respectfully requested.

Respectfully submitted,



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Attachments:

1st pages of U.S. Patents Nos. 5161934, 5253974, and 5516255

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